

What is claimed is:

1. A method of setting an initial error value of a rate-matching algorithm in a hybrid ARQ system, the method comprising
5 the steps of:

(a) determining an original initial error value, which is originally given for a rate-matching algorithm generating a rate-matching pattern for a hybrid ARQ system;

(b) calculating a modular operator K;

10 (c) calculating an incremental error value that depends on a number of retransmissions made; and

(d) calculating a new initial error value by adding said incremental error value with said original initial error value.

15 2. The method of claim 1, wherein said modular operator K is obtained by

$$K = \begin{cases} \text{integer} \left(\frac{e_{\text{plus}}}{e_{\text{minus}}} \right), & \text{if } \left(\frac{e_{\text{plus}}}{e_{\text{minus}}} \right) \geq 1 \\ \text{integer} \left(\frac{e_{\text{minus}}}{e_{\text{plus}}} \right), & \text{if } \left(\frac{e_{\text{plus}}}{e_{\text{minus}}} \right) < 1 \end{cases} ,$$

where e_{plus} and e_{minus} are originally given, and integer (A) is
20 defined by

$$\text{integer}(A) = N(A) \text{ or } N(A)+1 ,$$

where $N(A)$ represents the maximum of a set of integer numbers being less than A .

3. The method of claim 2, wherein said incremental value is
5 obtained by

$$\text{incremental error value} = (i \bmod K) \cdot e_{\text{minus}}.$$

4. The method of claim 1, wherein said new initial error value is used for a downward link or an upward link.

5. A method of setting an initial error value of a rate-matching algorithm in a hybrid ARQ system, the method comprising the steps of:

(a) determining an original initial error value, which
15 is originally given for a rate-matching algorithm generating a rate-matching pattern for a hybrid ARQ system;

(b) calculating a modular operator K ;

(c) calculating a first incremental value for a puncturing mode, said first incremental value depending on a
20 number of retransmissions made ; and

(d) calculating a new initial error value by adding a second incremental value to said original initial value, said

second incremental value depending on said first incremental value.

6. The method of claim 5, wherein said modular operator K is
5 obtained by

$$K = \begin{cases} \text{integer} \left(\frac{e_{\text{plus}}}{e_{\text{minus}}} \right), & \text{if } \left(\frac{e_{\text{plus}}}{e_{\text{minus}}} \right) \geq 1 \\ \text{integer} \left(\frac{e_{\text{minus}}}{e_{\text{plus}}} \right), & \text{if } \left(\frac{e_{\text{plus}}}{e_{\text{minus}}} \right) < 1 \end{cases} ,$$

where e_{plus} and e_{minus} are originally given, and integer (A) is
defined by

integer(A) = N(A) or N(A)+1,

10 where N(A) represents the maximum of a set of integer numbers
being less than A.

7. The method of claim 6, wherein said first incremental
value is obtained by

15 $e_{\text{HARQ}}(i) = i,$

where $e_{\text{HARQ}}(i)$ represents said first incremental value, and i
represents said number of retransmissions made.

8. The method of claim 7, wherein said new initial error value is obtained by

$$e_{\text{ini-new}} = e_{\text{ini-old}} + (e_{\text{HARQ}}(i) \bmod K) \cdot e_{\text{minus}} ,$$

where $e_{\text{ini-new}}$ represents said new initial error value, and $e_{\text{ini-old}}$ represents said original initial error value.

9. The method of claim 6, wherein said first incremental value is obtained by

$$e_{\text{HARQ}}(i) = \text{PBR}_{i \% K} ,$$

where $\text{PBR}_{i \% K}$ represents a first list of numbers obtained by excluding any number being greater than or equal to K from $\text{BR}_{j,n}$,

where $\text{BR}_{j,n}$ represents a second list of numbers obtained by bit-reversing j with n, and

n represents any integer number that satisfies $2^{n-1} < K \leq 2^n$.

10. The method of claim 9, wherein said new initial error value is obtained by

$$e_{\text{ini-new}} = e_{\text{ini-old}} + (e_{\text{HARQ}}(i) \bmod K) \cdot e_{\text{minus}} ,$$

where $e_{\text{ini-new}}$ represents said new initial error value, and $e_{\text{ini-old}}$ represents said original initial error value.

11. A method of setting an initial error value of a rate-matching algorithm in a hybrid ARQ system, the method comprising the steps of:

5 (a) determining an original initial error value, which is originally given for a rate-matching algorithm generating a rate-matching pattern for a hybrid ARQ system;

(b) calculating a modular operator K;

10 (c) calculating a first incremental value for a repeating mode, said first incremental value depending on a number of retransmissions made ; and

(d) calculating a new initial error value by adding a second incremental value to said original initial value, said second incremental value depending on said first incremental value.

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12. The method of claim 11, wherein said modular operator K is obtained by

$$K = \begin{cases} \text{integer} \left(\frac{e_{\text{plus}}}{e_{\text{minus}}} \right), & \text{if } \left(\frac{e_{\text{plus}}}{e_{\text{minus}}} \right) \geq 1 \\ \text{integer} \left(\frac{e_{\text{minus}}}{e_{\text{plus}}} \right), & \text{if } \left(\frac{e_{\text{plus}}}{e_{\text{minus}}} \right) < 1 \end{cases} ,$$

20 where e_{plus} and e_{minus} are originally given, and integer (A) is defined by

$$\text{integer}(A) = N(A) \text{ or } N(A)+1,$$

where $N(A)$ represents the maximum of a set of integer numbers being less than A .

5 13. The method of claim 12, wherein said first incremental value is obtained by

$$e_{\text{HARQ}}(i) = i,$$

where $e_{\text{HARQ}}(i)$ represents said first incremental value, and i represents said number of retransmissions made.

10 14. The method of claim 13, wherein said new initial error value is obtained by

$$e_{\text{ini-new}} = e_{\text{ini-old}} + (e_{\text{HARQ}}(i) \bmod K) \cdot e_{\text{minus}},$$

where $e_{\text{ini-new}}$ represents said new initial error value, and $e_{\text{ini-old}}$ represents said original initial error value.

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15. The method of claim 12, wherein said first incremental value is obtained by

$$e_{\text{HARQ}}(i) = \text{PBR}_{1\%K},$$

where $PBR_{i \% K}$ represents a first list of numbers obtained by excluding any number being greater than or equal to K from $BR_{j,n}$,

where $BR_{j,n}$ represents a second list of numbers obtained by bit-reversing j with n , and

5 n represents any integer number that satisfies $2^{n-1} < K \leq 2^n$.

16. The method of claim 15, wherein said new initial error value is obtained by

$$e_{mi-new} = e_{mi-old} + (e_{HARQ}(i) \bmod K) \cdot e_{minus},$$

10 where e_{mi-new} represents said new initial error value, and e_{mi-old} represents said original initial error value.